

# Sacramento and Delta Levee

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## B R I E F I N G

February 22, 2006



US Army Corps  
of Engineers®

SAFCA

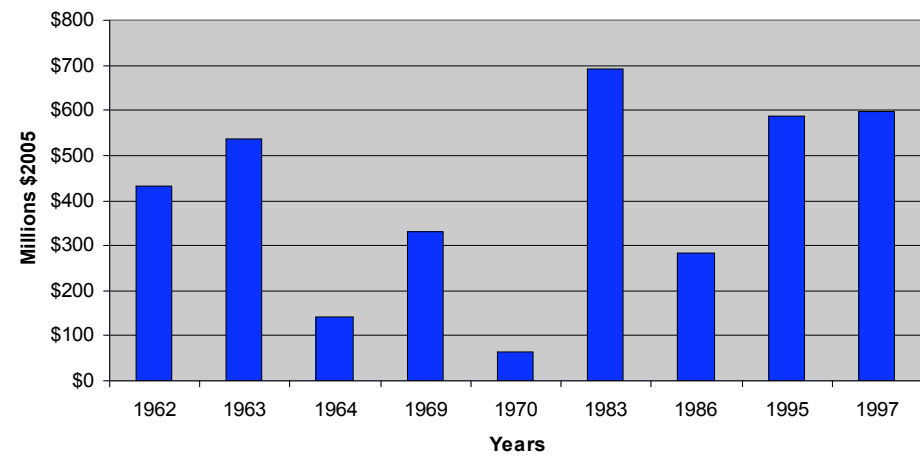
# Viewing Itinerary



# California's Flood Crisis



Central Valley Historical Flood Damage





## KEY CHALLENGES IN CENTRAL VALLEY

1600 miles of Federal Project Levees

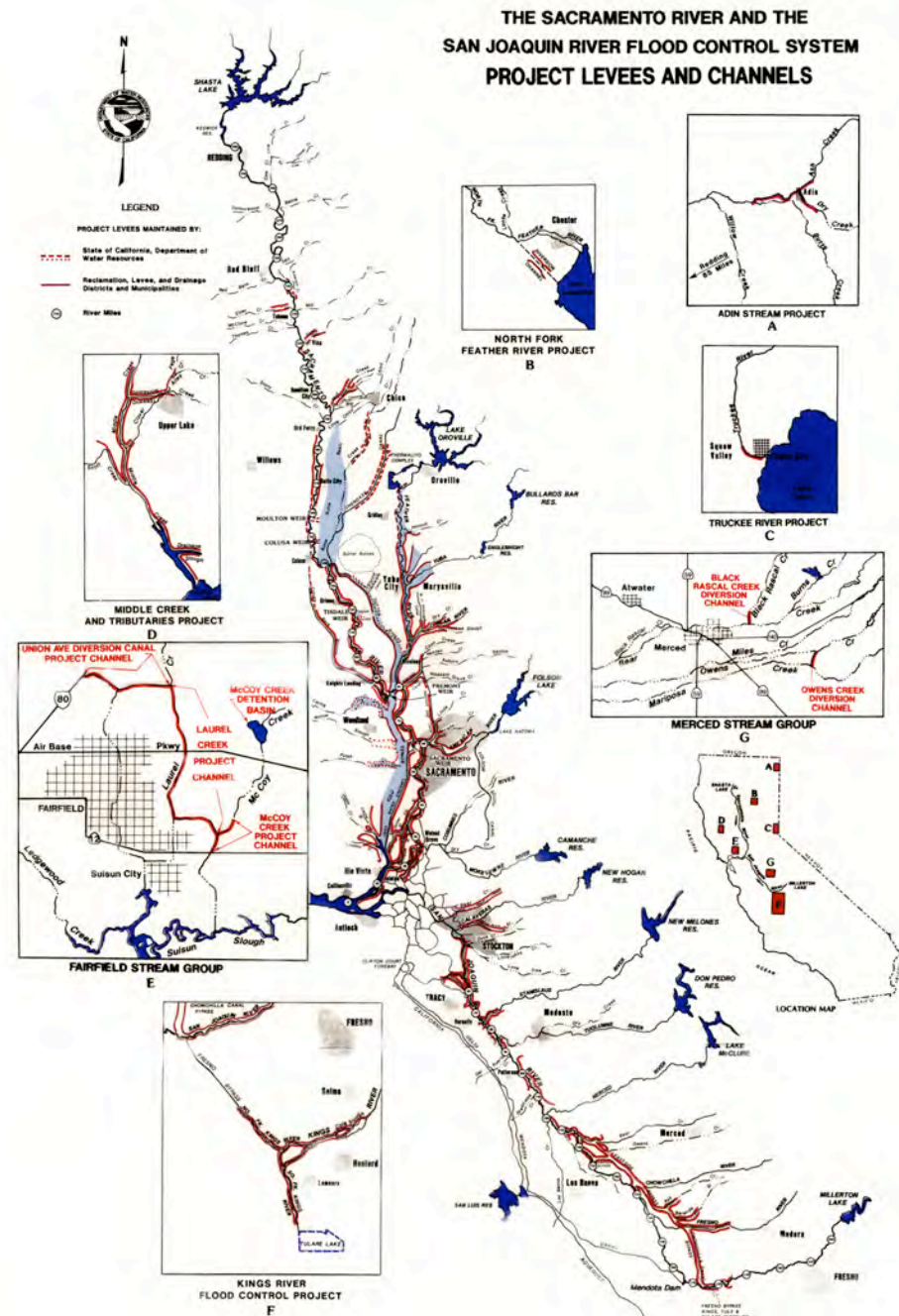
700 miles of local Delta Levees

2300 miles of Levees

- Old levees, many originally built by farmers, most without adequate engineering



- Aging system, continuing deterioration (e.g. erosion, seepage distress, burrowing rodents)

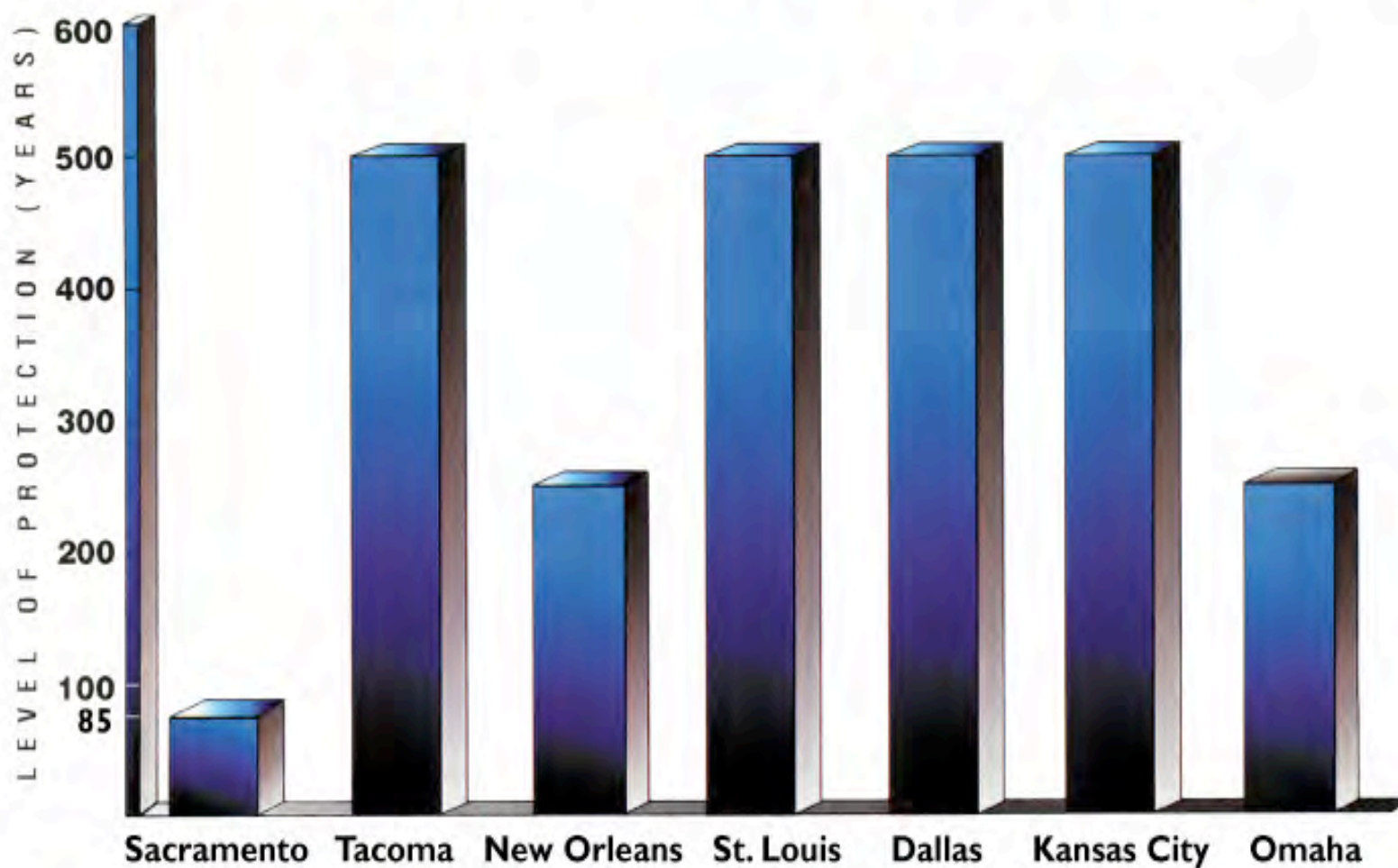




# Levee and Bank Erosion

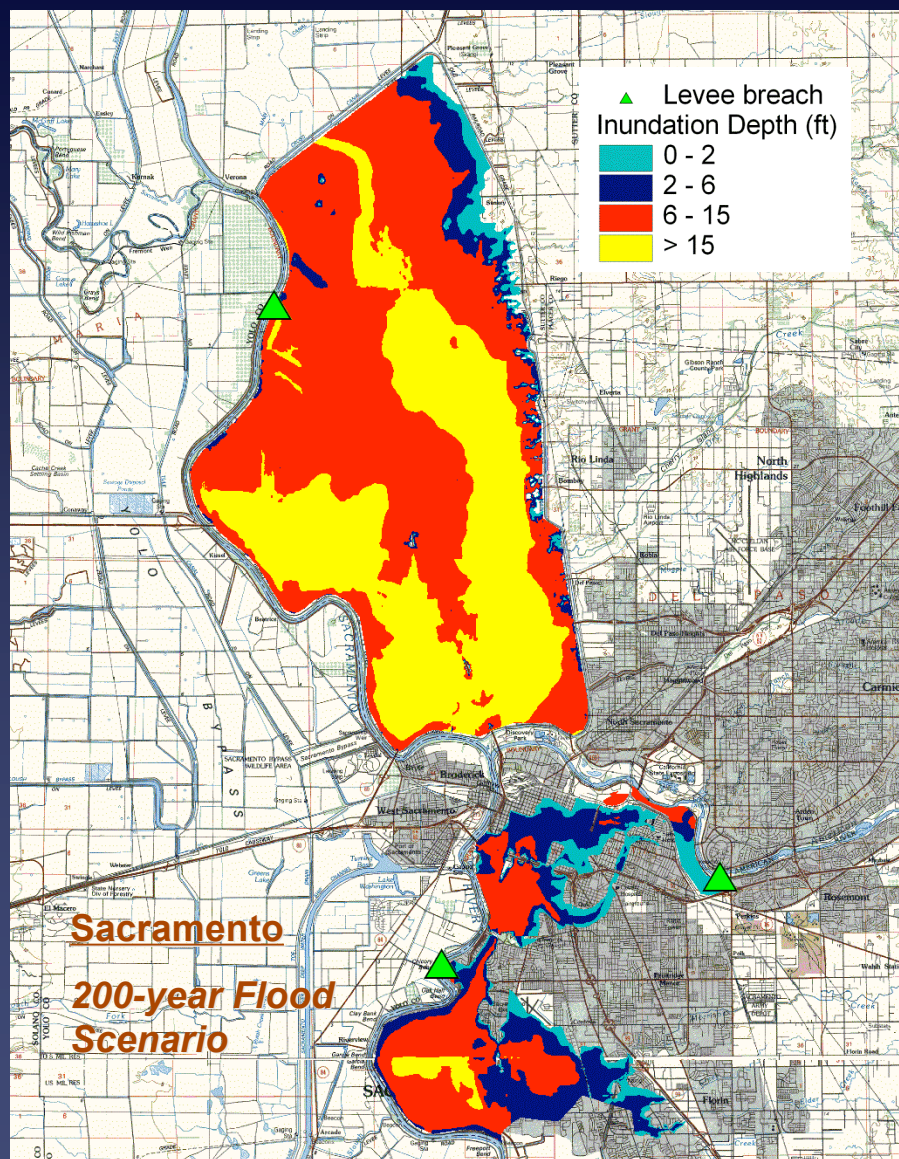


# Sacramento's Level of Flood Protection by Comparison to other River Cities





# FLOOD SCENARIO: 200-year Flood in Sacramento



## Critical Infrastructure Impacted

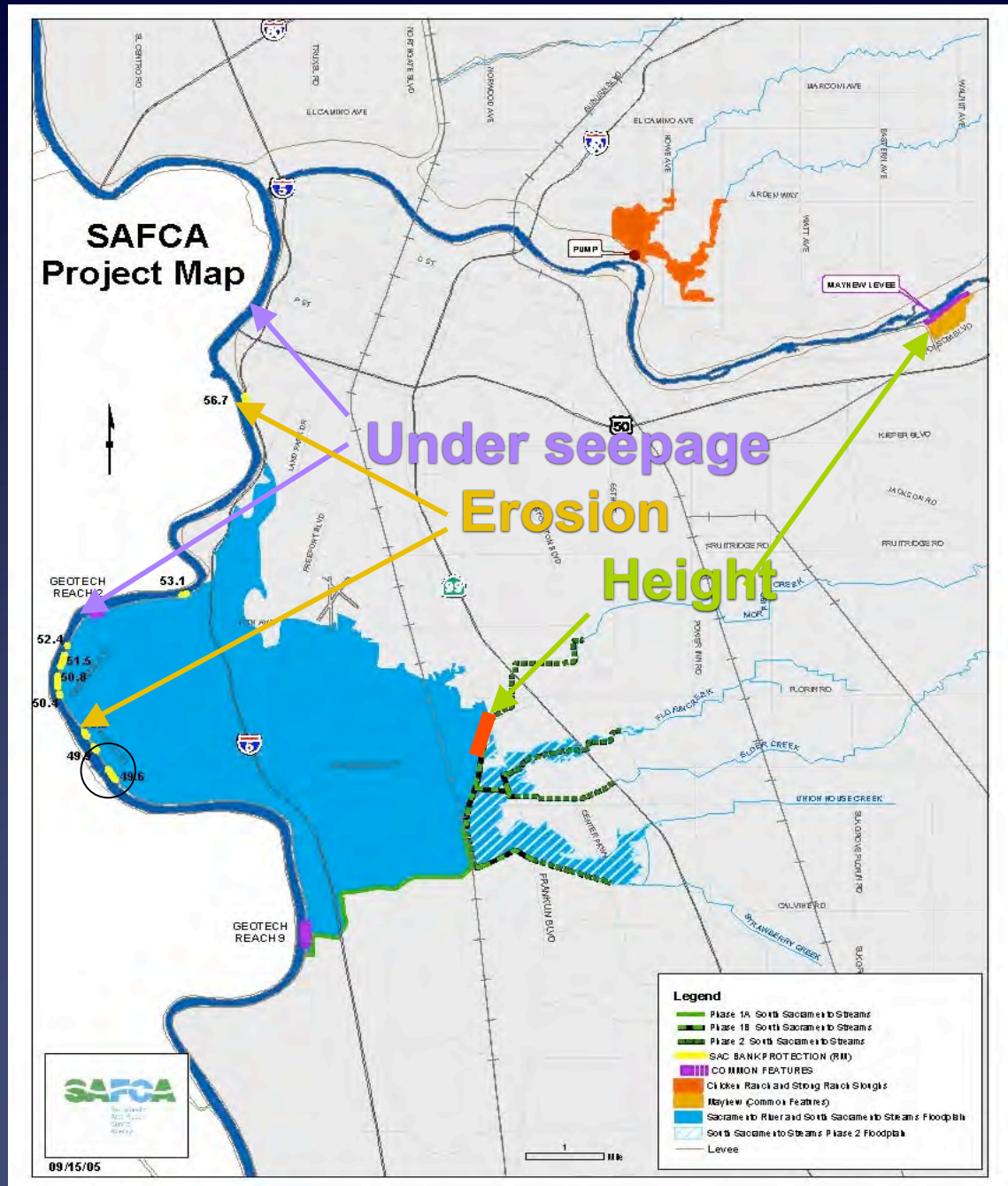
- 12 Fire stations, 9 have inundation depth of 4 ft or more
- 1 Police station, minor flooding
- 38 Power substations, including 3 high voltage substations
- 16 Wastewater pump stations; likely many pipe breakages
- 1 Water treatment plant; water not drinkable
- 2 Airports; including 13 ft flooding of Sac. Intl. Airport

**Direct Flood Damage Costs**      \$ 13 billion  
**Net indirect fiscal impacts up to**      \$15 billion

*Larger, deeper hypothetical floods would cause even greater damage and disruption to the Sacramento area*

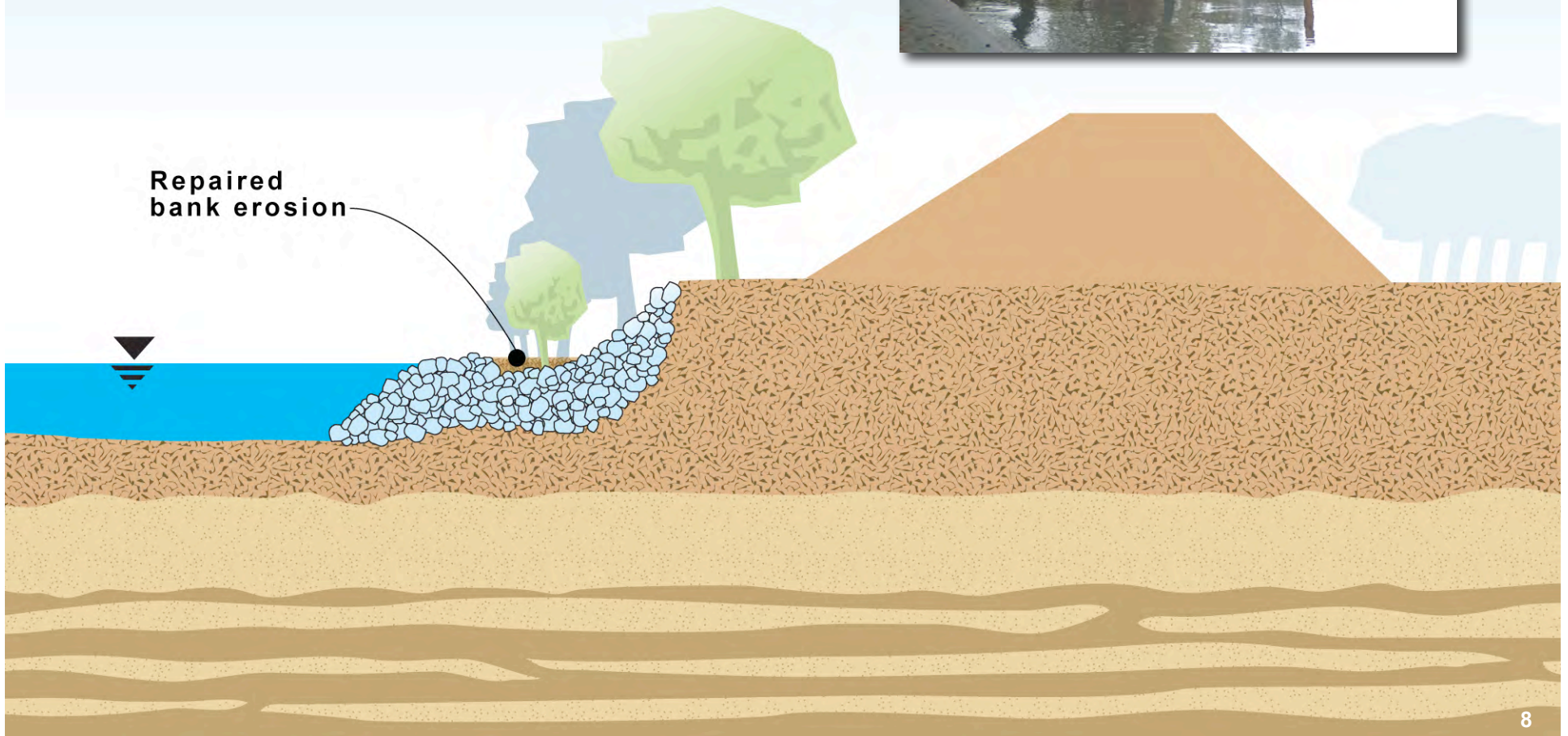
# Remaining 100-Year Certification Projects for Sacramento

- Repair Pocket Erosion Sites
- Repair Pocket Underseepage Sites
- Morrison Creek Levees
- Mayhew Levee





# Bank Erosion Repairs

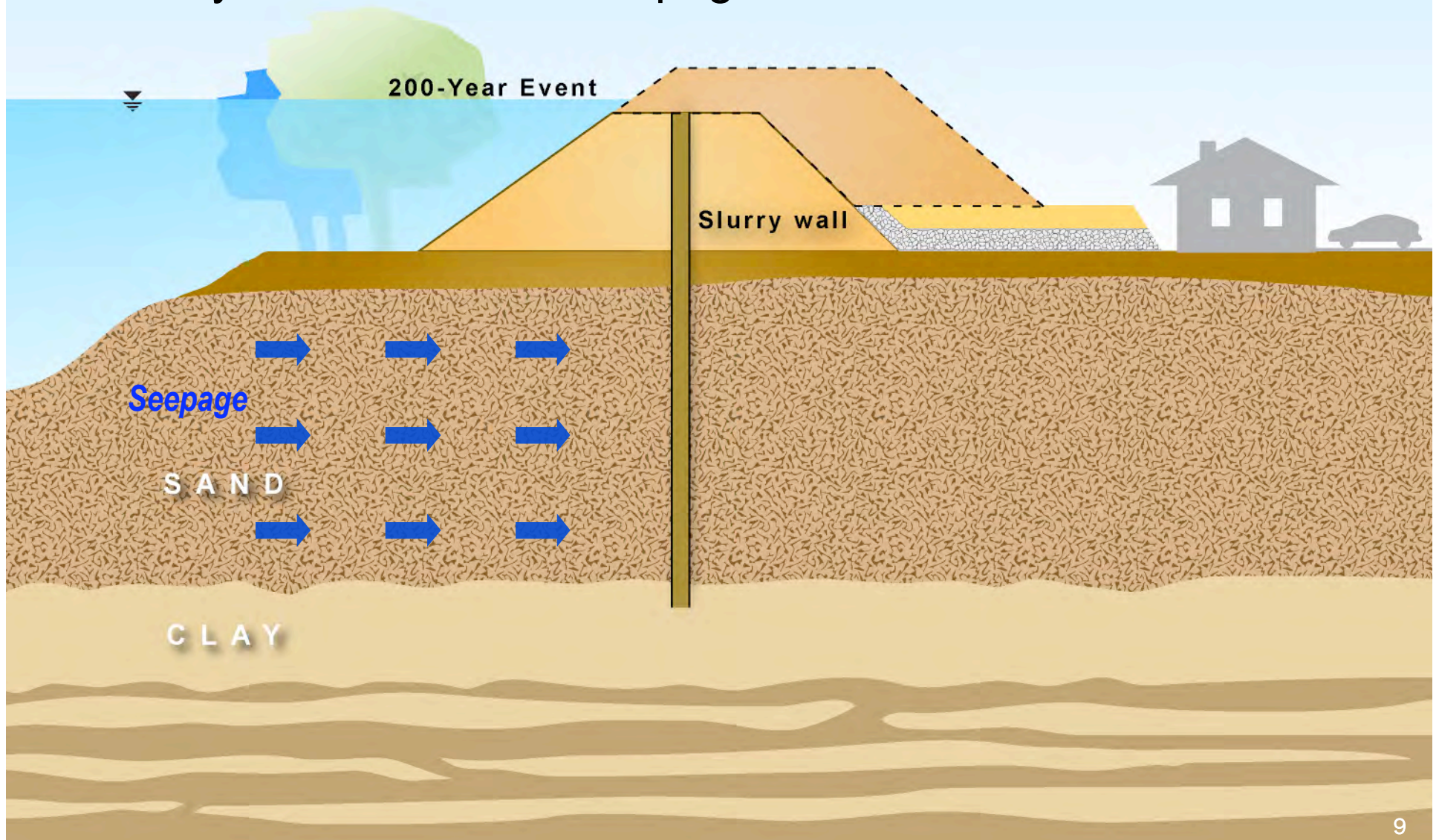




SLURRY WALL & LEVEE RAISE  
FOR HIGHER FLOOD  
PROTECTION

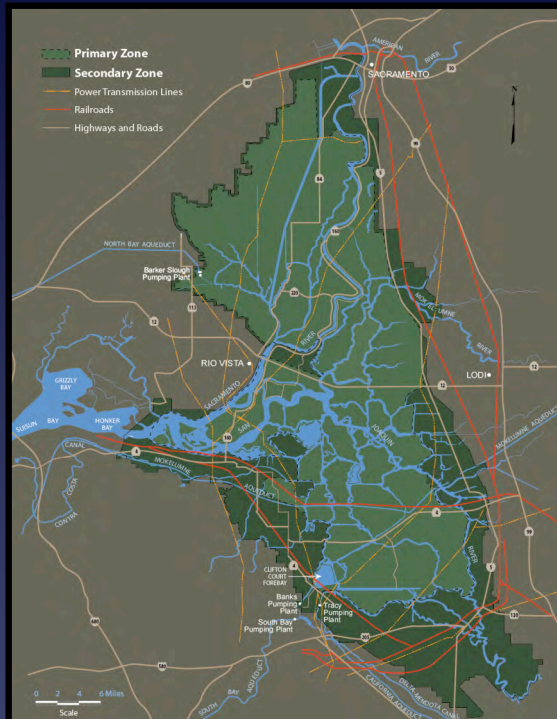
## Levee Upgrades:

- Raise in Levee Height
- Slurry Wall to Cut Off Seepage

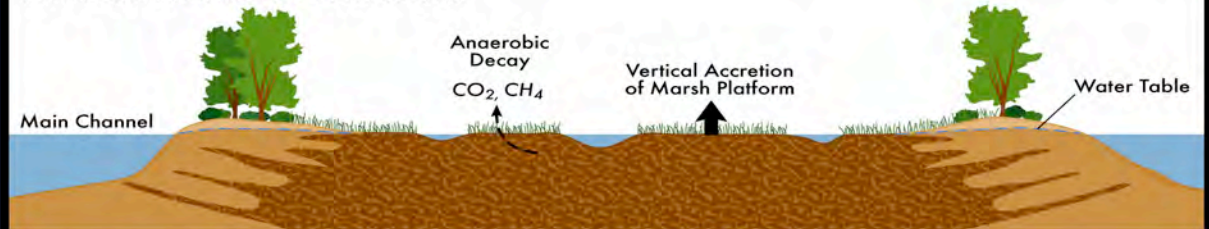




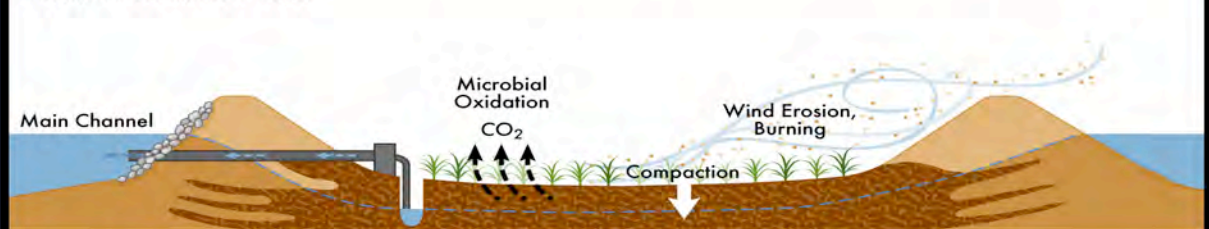
# Delta Levees – Protect “Bowls” rather than Islands



## Pre-1880: Freshwater Tidal Marsh



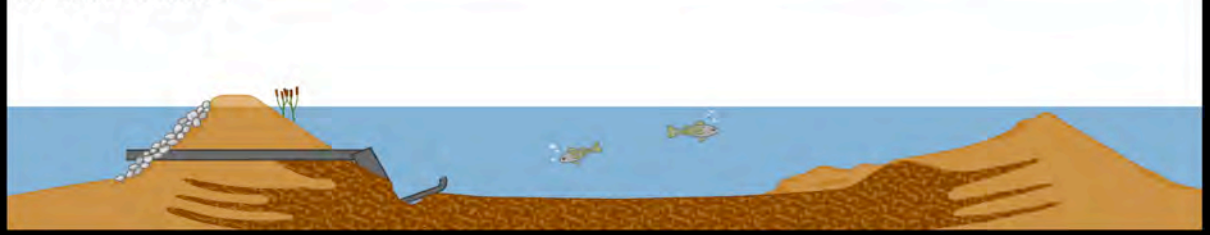
## 1900's: Elevation Loss



## 2000's: Increased Levee Maintenance



## or Levee Failure

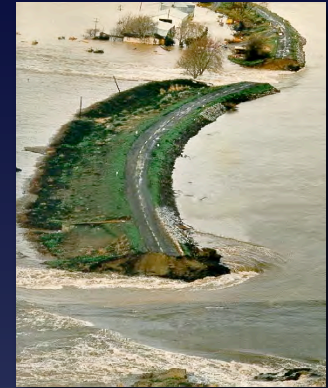


Graphic courtesy of Dr. Jeffrey Mount

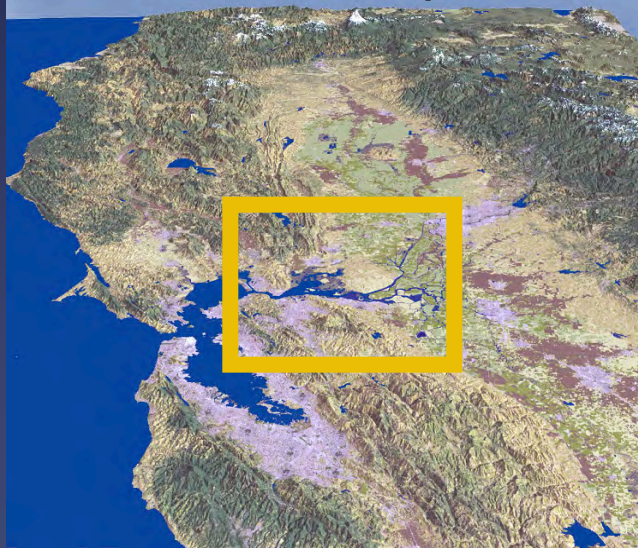
# FLOOD SCENARIO: Sacramento-San Joaquin Delta

- Massive Levee Failure in the Sacramento-San Joaquin Delta (from large flood or seismic events)

*Up to \$30 to \$40 billion in damage/economic losses in first 5 years following massive levee failure*



Sacramento-San Joaquin Delta



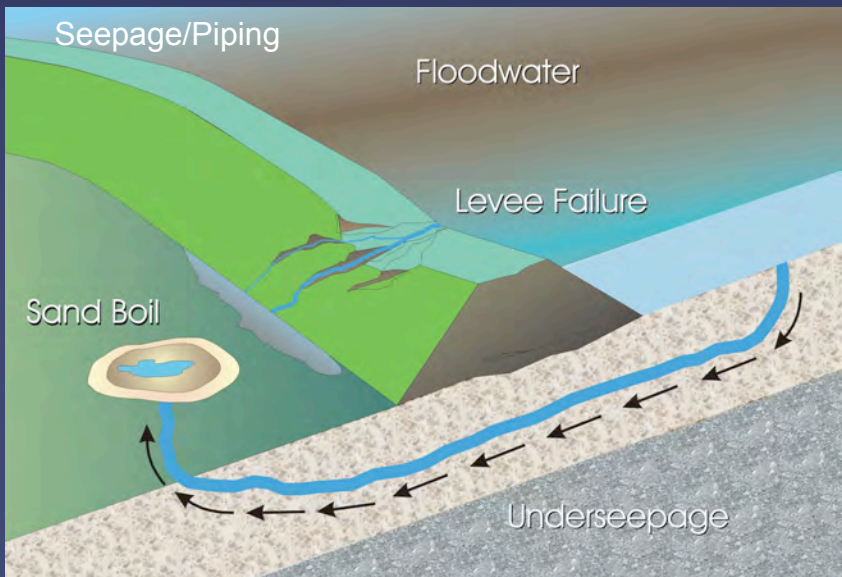


## *Risks to Levee Integrity*

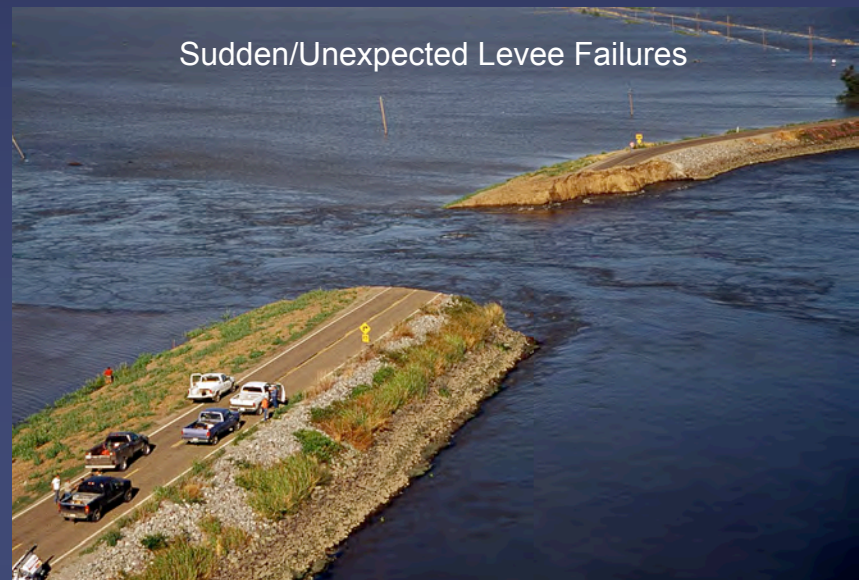
Overtopping Failures



High Tides & Winds

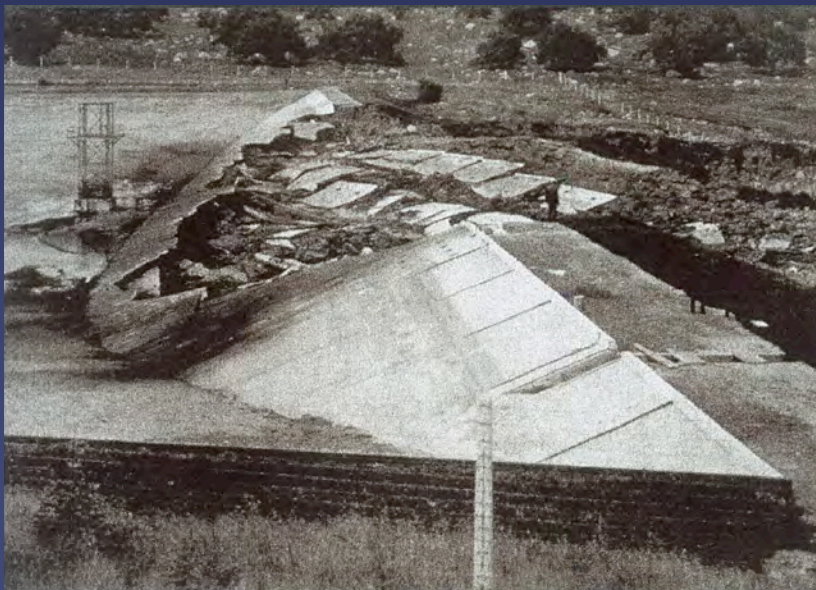
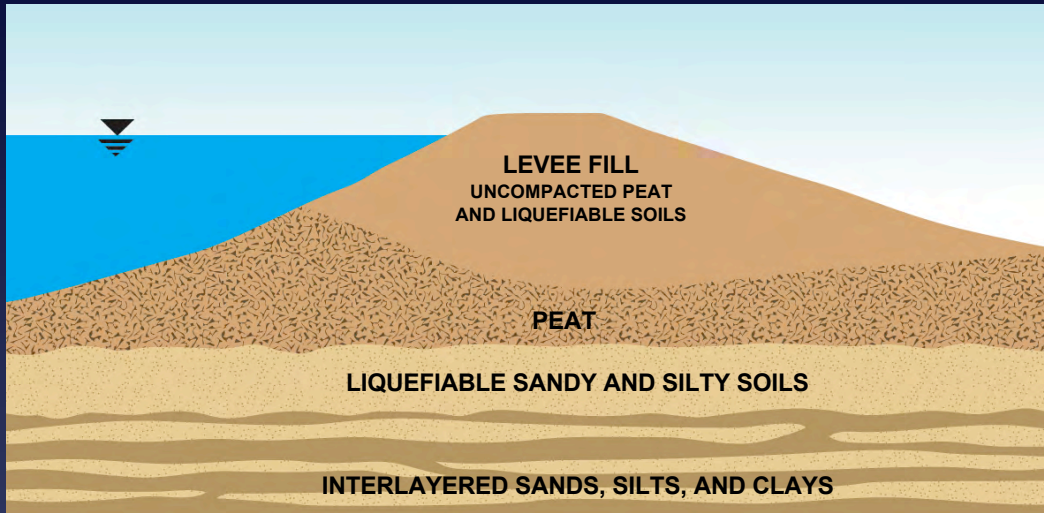


Sudden/Unexpected Levee Failures





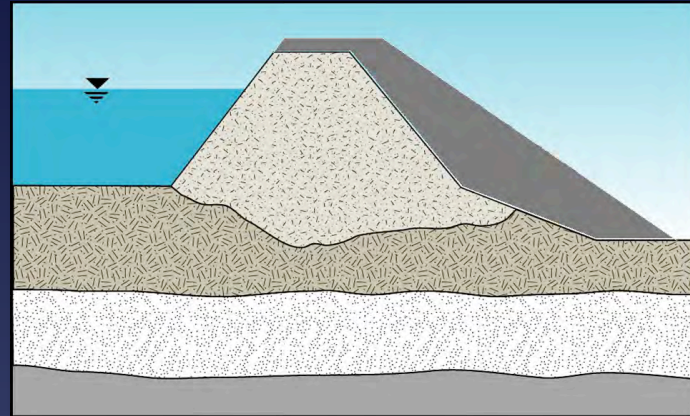
# Potential for Earthquake-Induced Levee Failure





# Delta Risk Management Strategy

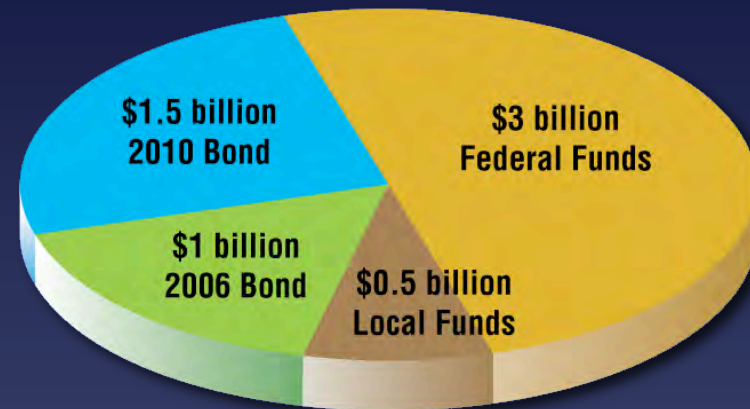
- Evaluate current and future risk
- Identify consequences
- Identify risk reduction measures, including levee upgrades and land use changes
- Evaluate alternative strategies to reduce risk



# Building California's Water Future

## Protecting California from Devastating Floods

**Bond funds will leverage other flood investments**



### Flood Control Investment over 10 Years:

	State	Federal	Local	Total
1. Repair of State-Federal Project Levees and Facilities	\$ 510 million	\$ 300 million	\$ 30 million	\$ 840 million
2. Flood Control and Levee System Improvements	\$ 400 million	\$ 930 million	\$ 150 million	\$1,480 million
3. Delta Levee Subventions and Special Projects	\$ 910 million	\$ 400 million	\$ 100 million	\$1,410 million
4. Flood Control Subventions	\$ 450 million	\$1,190 million	\$ 190 million	\$1,830 million
5. Floodplain Mapping	\$ 90 million	\$ 0	\$ 0	\$ 90 million
6. Floodway Corridor Program	\$ 140 million	\$ 180 million	\$ 30 million	\$ 350 million
<b>TOTAL</b>	<b>\$ 2.5 billion</b>	<b>\$ 3.0 billion</b>	<b>\$ 0.5 billion</b>	<b>\$ 6.0 billion</b>





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# US Army Corps of Engineers American River Watershed Projects



## ✓ Common Features

Levee Improvements along the American & Sacramento Rivers  
Authorized at \$205M  
Construction is approximately 50% complete

## ✓ Folsom Dam Modifications

Folsom Dam performance improvements  
Authorized at \$150M  
Design phase

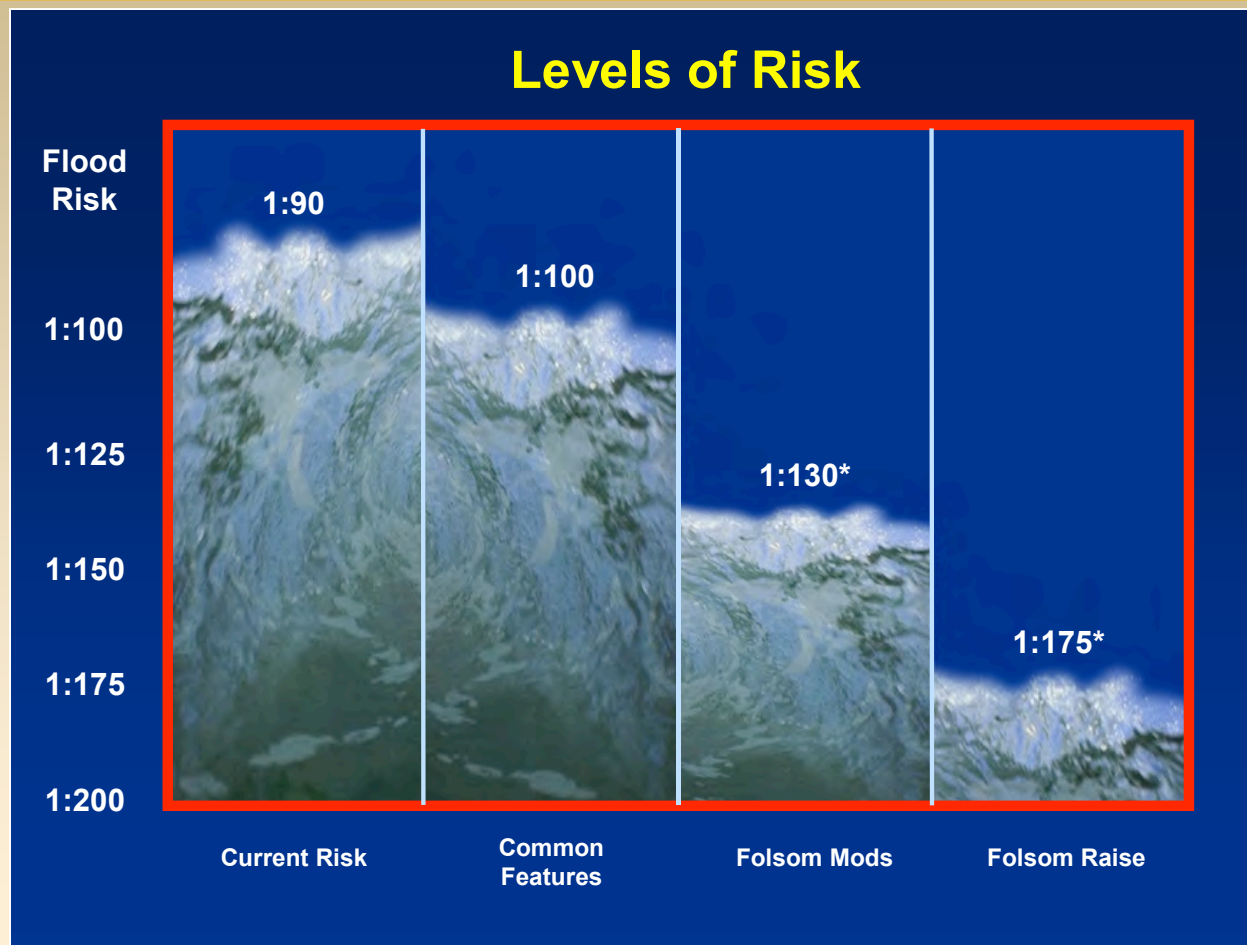
## ✓ Folsom Dam Raise

Increase storage  
Authorized at \$257M  
Design Phase



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# US Army Corps of Engineers American River Watershed Projects



*Approximate Level of Risk in any given year*

*\*Design is being refined.*





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# US Army Corps of Engineers Delta Initiatives



## Short-Term Solutions:

### Delta Levees Report to Congress

- PL 108-361, CALFED Bay-Delta Act
- Define strategy to spend authorized \$90M
- Framework for short and long-term solutions
- Report to Congress 18 May 2006



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# US Army Corps of Engineers Delta Initiatives



## Long-Term Solutions - Vision of the Delta:

### Delta Islands and Levees Feasibility Study

- Recommend comprehensive plan and specific projects
- Incorporates Delta Risk Management Strategy (DRMS)





## Capital Outlay Priorities

1. 100-year flood protection for Pocket-Meadowview and Mayhew Neighborhoods
2. Joint Folsom Dam Improvements Project: Expedite integrated design for flood and dam safety
3. Complete 200-year flood protection work for Sacramento area levees:
  1. Natomas
  2. American River
  3. Sacramento River